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Some results of S-transform analysis of the transient planetary-scale wind oscillations in the lower thermosphere

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Abstract

Technique appropriate to the analysis of lower thermospheric wind data recorded by global-scale networks of ground-based instruments are discussed. The S-transform technique is shown to be effective in the analysis of the main features of travelling planetary waves and this method is applied to the time series of horizontal-velocity data obtained during the DYANA campaign (January-March, 1990). The analysis reveals strongly transient behavior of the day-t--day lower thermosphere wind variations, as well as their specific longitudinal structure. In particular, it was found that the revealed quasi-15 day and quasi-5 day wind oscillations may be described as transient westward-propagating waves with zonal wavenumber s = 1, while an oscillation with the a period near 7 days is tentatively identified as having a wavenumber s = 0.